

New Pharmacology Studies on the ISS

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Risk of Ineffective or Toxic Medications Due to Long Term Storage

Gap 1: We do not know how medications are used during spaceflight

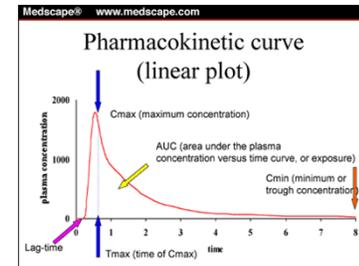
Gap 2: We do not know how long medications may be safe and effective beyond their expiration dates

Concern of Clinically Relevant Unpredicted Effects of Medication

Gap 3: We do not know the extent to which spaceflight alters pharmacokinetics

Gap 4: We do not know the extent to which spaceflight alters pharmacodynamics

Gap 5: We do not know the extent to which current antimicrobial therapies are effective against microbes that have been altered by spaceflight.



Retrospective Data Analysis

Existing inflight crew medication use data are being examined for trends of unusual dosing, unexpected side effects, or other indications of altered activity.



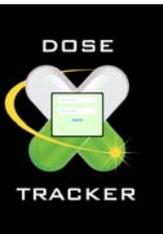
Medication Stability

Medication doses stored on the ISS were returned to Earth for chemical analysis



PK/PD

Selected in the 2013 NRA submissions, this study will combine a classical pharmacokinetics study with noninvasive measures of a relevant pharmacodynamics endpoint, sleep. The study drugs include a sedative/hypnotic, an alertness medication, an antihistamine used for treatment of space adaptation syndrome, an NSAID pain reliever, and 2 antibiotics.



Dose Tracker

Crew medication use data will be collected in greater detail with this customized iPad app. Inflight medication usage patterns for each crewmember will be compared to those observed during their ground data collection period.